

Kohsaku YAMADA\*: Notes on *Radula*  
from Tanzania, East Africa

山田耕作: タンザニア産 *Radula*属について

In 1968, Dr. A.J. Sharp and Mrs. Evelyn Sharp made an expedition to Tanzania, East Africa, and collected many interesting bryophytes. I have studied the *Radula* specimens in this collection, and recognized the following six species, of which one is new to science. I wish to express my sincere thanks to Dr. S. Hattori and Dr. A.J. Sharp for giving me an opportunity to study these interesting materials and for reading the manuscript, and to Dr. N. Kitagawa of Nara University of Education for checking the Latin. Specimens used for this study are preserved in the herbaria of the Hattori Botanical Laboratory (NICH) and the University of Tennessee (TENN).

1. *Radula allamanoi* Gola, Mem. R. Acad. Sci. Torino, ser. 2, 65(1): 8 (1914). Trail from Mweka to Kibo Peak on Mt. Kilimanjaro, 9500-9700 ft alt., on decaying log, coll. A.J. Sharp 7750.

Previously recorded only from Kenya (Castle 1966); New to Tanzania!

2. *Radula boryana* (Web.) Nees in Gott. et al., Synop. Hepat. 254 (1845). Fog forest above Mweka, N. of Moshi,  $\pm 6000$  ft alt., Arusha Nat. Park, on decaying trunk, coll. A.J. Sharp & R.I. Ruganda 6972, 6973; trail from Mweka to Kibo Peak on Mt. Kilimanjaro, 5750-6000 ft alt., on decaying log, coll. A.J. Sharp et al. 7267; trail from Kitoto to Meru Crater Rim, 8000-8500 ft alt., Arusha Nat. Forest, on boulder, coll. A.J. Sharp et al. 486.

Castle (1937) reported this species from Tanganyika. The Tanzanian plants were very variable in form and size of leaf-lobules.

3. *Radula evelynae* Yamada, nov. sp.

A specibus subgeneris *Cladoradulae* distincta; foliis remotis vel laxe imbricatis, lobulis foliorum quadratis apice anguste rotundato-triangularis et saepe acuminatis basi rotundatis vel triangularis, parietibus cellularum foliorum tenuibus.

Plants medium-sized, olive-green to yellow-brown in the herbarium,

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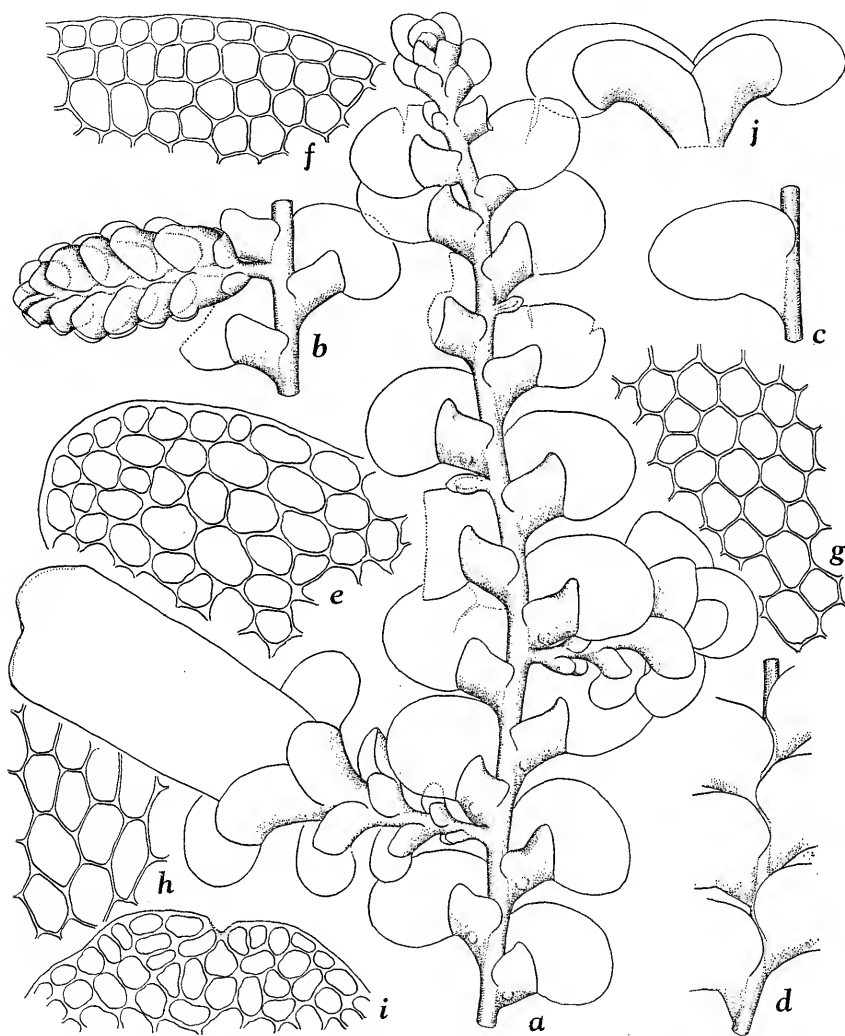


Fig. 1. *Radula evelynae* Yamada, *a*. Upper portion of stem with perianth, in ventral view,  $\times 21$ . *b*. Portion of stem with antheridium, in ventral view,  $\times 21$ . *c*. Leaf on stem, in dorsal view,  $\times 21$ . *d*. Dorsal base of leaf-lobes on stem, in dorsal view,  $\times 21$ . *e*. Portion of cross-section of stem,  $\times 504$ . *f-h*. Cells of lobe of stem-leaf, *f* from margin, *g* from middle, *h* from base, all  $\times 504$ . *i*. Cells of apical portion of leaf-lobule,  $\times 504$ . *j*. Female bracts, in ventral view,  $\times 21$ . Drawn from holotype in NICH (295677).

creeping on bark of trees, in patches. Stems about 10–20 mm long, 0.1 mm in diameter, with leaves 1.5–1.7 mm wide, irregularly pinnately branched, branches short; cross-section of stem 9–10 cells thick, both cortical and medullary cells thick-walled with large trigones. Leaf-lobes of stem slightly distant to loosely imbricate, widely spreading, convex, when flat ovate, 0.75–0.80 mm long and 0.7 mm wide, apex broadly rounded, margins entire, the dorsal base rounded (but non-auriculate), covering  $1/2$  to  $2/3$  of the width of stem, or often extending farther, the line of insertion straight; cells from lobe-apex  $8-10 \times 4-5 \mu$ , median lobe-cells  $10-13 \times 9-10 \mu$ , walls thin, trigones indistinct, intermediate thickenings absent, basal lobe-cells  $16-20 \times 8-11 \mu$ ; cuticle smooth; leaf-lobules quadrate, about  $1/2$  of the length of leaf-lobes, apex narrowly rounded, often acuminate, inner margin straight to slightly arched, outer margin curved, mid-margin somewhat involute, base rounded to triangular, covering  $1/3$  to  $3/4$  of the stem-width (never fully across the stem), the line of insertion straight, keel at angles of about  $40^\circ$  with the stem, 0.23–0.28 mm long, straight to slightly arched, somewhat decurrent; rhizoid-initial area slightly convex, rhizoids few, pale brown. Dioicous. Male inflorescences on short branches, capitate to spicate with 3–8 pairs of bracts, lobes densely imbricate, about  $1/2$  of the length of those of stem-leaves, ovate, obliquely spreading, apex broadly rounded, keel strongly arched; female inflorescences terminal on short branches, bract-lobes oblong-ovate with rounded apex, the lobules oblong-ovate with arched keel. Perianth tubular, 2.3 mm long, 0.9 mm wide at middle, the mouth usually two-lipped.

Specimen examined. Tanzania. Tekukumia Falls, Meru Crater Park, 7000 ft alt., Arusha Nat. Park, on tree trunk, July 13, 1968, coll. A.J. & Evelyn Sharp, D.E.F. Vesey-Fitzgerald & V.C. Gilbert 71b—holotype in NICH and isotypes in TENN, TNS.

This new species belongs to the section *Cladoradula* of subgenus *Cladoradula*. The diagnostic characteristics of this species are (1) the quadrate leaf-lobule, (2) the distant to loosely imbricated leaf-lobes, (3) the rounded to triangular base of leaf-lobules, (4) the thin-walled cells of leaf-lobes, and (5) the narrowly rounded, triangular and often acuminate apex of leaf-lobules. This species is peculiar and no close relative is known in subgenus *Cladoradula*. The specific epithet "*evelynae*" is proposed in honor of Mrs.

Evelyn Sharp, who collected this species and many other bryophytes in Tanzania.

4. *Radula meyeri* Steph., Hedwigia 27: 62 (1888). Fog forest above Mweka, N. of Moshi,  $\pm 6000$  ft alt., Arusha Nat. Park, on stump, coll. A.J. Sharp & R.I. Ruganda 6983, on trunks 6959, 6994a, and on rock 7032; along tourist trail from Marangu to Kibo Peak, Mt. Kilimanjaro 6000 ft alt., on trunk, coll. A.J. Sharp et al. 813.

Previously reported by Castle (1964) from Tanzania (as Tanganyika) and Cameroun.

5. *Radula recurvifolia* Steph., Hedwigia 27: 63 (1888). Trail from Kitoto to Meru Crater Rim, 8000-8500 ft alt., Arusha Nat. Forest, on trunk, coll. A.J. Sharp et al. 520a; Ngorongoro Crater Rim,  $\pm 8000$  ft alt., on trunk, coll. A.J. Sharp et al. 6833b.

Previously reported by Castle (1964) from Tanzania (as Tanganyika), Ethiopia, and Cameroun.

6. *Radula stipatiflora* Steph., Spec. Hepat. 4: 159 (1910). Trail from Kitoto to Meru Crater Rim, 8000-8500 ft alt., Arusha Nat. Forest, on trunk, coll. A.J. Sharp et al. 462, 533, on moist bark of *Juniperus*, 11a, and on creek bank, 502; trail from Mweka to Kibo Peak on Mt. Kilimanjaro, 9500-9700 ft alt., on trunk, coll. A.J. Sharp 7569a and on stump 7608; wet forest along road 3 mi. E. of Meru Crater Gate of Arusha Nat. Park, 4800 ft alt., on fallen log, coll. A.J. Sharp et al. 7229a, 7230; near Tululusia Hill, Arusha Nat. Park, on cliff, coll. A.J. Sharp et al. 8872; Meru Crater area in Arusha Nat. Park, on trunk, coll. A.J. Sharp et al. 7925. on fallen branch, 8100-8400 ft alt., 7850.

Previously reported by Castle (1965) from Tanzania (as Tanganyika), West Africa, Ruanda, and N.E. Union of South Africa. This is one of the commonest species in the Arusha Nat. Park area of Tanzania.

#### Literature Cited

Castle, H. 1937. Ann. Bryol. 9: 13-56. —, 1964. Rev. Bryol. Lichénol. 33: 185-210. —, 1965. Ibid. 33: 328-398.

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シャープ博士夫妻と随行員がタンザニアで採集した 蘚苔植物の中からとくに苔類の *Radula* 属だけを調べ、その結果 6 種を確認した。その内 1 種を新種として記載し、別の 1 種を新産としてそれぞれタンザニアの苔類フロラに加えた。